



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,406	07/01/2003	Jens Gebhardt	06580024AA	9432
7590 03/24/2006			EXAMINER	
McGuireWoods LLP			BARNEY, SETH E	
Suite 1800			ART UNIT	
1750 Tysons Boulevard			PAPER NUMBER	
McLean, VA 22102-4215			3752	

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/609,406

Applicant(s)

GEBHARDT, JENS

Examiner

Seth Barney

Art Unit

3752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 5-12, 14, 16, 17, 21-23 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 13, 15, 18-20 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings were received on January 4, 2006. These drawings (Figures 1a and 1b) are acceptable.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "replacement kit" of claim 24 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. As currently claimed the Examiner is unable to determine the bounds of the claim. The Examiner is unsure if the replacement kit as claimed includes only a longitudinally slideable spool and an element reducing hydraulic latching effects or if it further includes opposing solenoid end caps. Furthermore, the claim recites "slideable spool" but claims no relative reference point of where the spool slides. Finally, the Examiner questions if the claimed structure is intended to replace a valve body of a fuel injector as it is currently claimed as a replacement kit for a valve control body. Applicant is required to make clear what structure is being claimed.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 3752

7. Claim 24 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,574,844 to Neff et al.

Neff discloses a kit having a longitudinally slideable spool (73) including an element reducing or minimizing latching effects (114,134) between the spool and end caps of the fuel injector. Examiner notes that the recitation of hydraulic latching effects is functional language. The prior art only needs to be capable of meeting the claim. Neff has the proper structure located in the proper position such that it is capable of performing the functional language of the claim.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-4, 13,15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,992,821 to Rookes in view of U.S. Patent No. 4,574,844 to Neff et al.

Regarding claims 1 and 13, Rookes discloses a valve control body having:

-a control body

-opposing solenoid coils (16' and 18') positioned at respective end of the control body.

Art Unit: 3752

-a longitudinally slideable spool (14) positioned within a bore (22) of the control body and between the opposing solenoid coils.

Rookes does not disclose a mechanism which at least minimizes fluid accumulation and hydraulic latching effects.

Neff discloses a longitudinally slideable spool (73) within a bore (22) including a mechanism (114,134) which reduces fluid accumulation. It is old and well known in the art to provide simple sealing members where one having ordinary skill in the art recognizes a need. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add the sealing O-ring of Neff to the slideable spool of Rookes in order to sealingly engage surfaces as necessary. The Examiner further notes that adding the o-ring to Rookes (under any motivation) is enough to meet the limitations of the claims. Adding the o-ring to Rookes meets all of the structural limitations of the claims by having the o-ring in that location would in fact reduce hydraulic latching. The claimed hydraulic latching is merely functional language and requires nothing further than an o-ring located in the correct position.

Regarding claims 2 and 15, the sealing O-ring of Neff is located in the groove of the spool.

Regarding claim 3, the seal of Neff is an O-ring.

Regarding claim 4, the seal is positioned proximate to the a first end of the control body. See Figure 3 of Neff.

Regarding claim 18, the O-ring, by reducing fluid accumulation would also prevent latching effects.

Art Unit: 3752

10. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,964,406 to Zuo in view of U.S. Patent No. 4,574,844 to Neff et al.

Regarding claim 19, Zuo discloses a fuel injector having:

- a body control valve having inlet port and working ports. See Figure 1.

- a first and second solenoid coil (13, 14) positioned at opposing ends of the control body.

- a slideably mounted spool (30) arranged between the first and second solenoid coils. See Figure 1.

- an intensifier chamber having a piston (50) and plunger (51) assembly, wherein the intensifier chamber is in fluid communication with the working ports. See Figure 1 and column 4 lines 21 to 45.

- a high pressure fuel chamber arranged below the portion of the plunger. See Figure 1.

- a needle chamber having a needle (60) responsive to an increased fuel pressure created in the high pressure chamber. See column 3 lines 39 to 55.

Zuo does not disclose means for minimizing fluid accumulation between the end of the spool and at least one of the first and second solenoid coils. Neff discloses a longitudinally slideable spool (73) within a bore (22) including a mechanism (114,134) which reduces fluid accumulation and hydraulic latching effects (even though Neff discloses an air valve, the o-ring would in fact reduce fluid accumulation). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add the sealing O-ring of Neff to the

Art Unit: 3752

slideable spool of Zuo in order to sealingly engage surfaces as necessary. The O-ring, by reducing fluid accumulation would also prevent latching effects.

Regarding claim 20, the seal of Neff is located within a groove of the spool and is in slideable contact with a bore wall of the control valve.

Response to Arguments

11. Applicant's arguments filed January 4, 2006 have been fully considered but they are not persuasive. Applicant argues that Neff does not disclose hydraulic latching effects because it is an air valve. While it is true that Neff does not disclose hydraulic latching effects, Neff does in fact disclose an element that would reduce hydraulic latching effects. This element is an o-ring (as is the instant application), and while it is not present in Neff to reduce hydraulic latching effects, the o-ring would act to reduce fluid accumulation and hydraulic latching effects as it is located in the equivalent place as the instant application. As currently claimed reducing hydraulic latching effects is functional language. Any o-ring located in the proper location would function to reduce hydraulic latching effects. Adding the o-ring of Neff for any motivation (regardless of hydraulic latching effects not being disclosed by any reference) to Zuo or Rookes would produce all of the structure of the claimed apparatus. In summary, no reference needs to specifically recite reducing fluid accumulation or reducing latching effects as long as the resulting combination meets the structural limitations of the claims and is capable of performing the functional language.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seth Barney whose telephone number is (571)272-4896. The examiner can normally be reached on 7:30am-5:00pm (Mon-Fri), first Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on (571)272-4919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

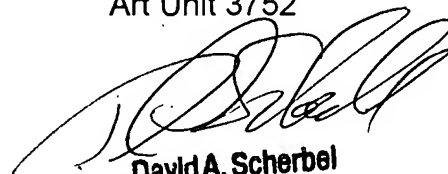
Art Unit: 3752

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sb



Seth Barney
Examiner
Art Unit 3752



David A. Scherbel
Supervisory Patent Examiner
Group 3700